A MODULAR APPROACH TO FIRST LANGUAGE ACQUISITION

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1 Introduction

Data from children acquiring the causative alternation in Thai provides evidence that sheds light on the relation between the syntactic development and the semantic development as well as the relation between language and cognition

A theory based on the relationship between UG, Linguistic Input, Non-linguistic Input, and Cognition, is proposed to account for the relations

2 The Causative Alternation

A causative verb is a verb whose object is a theme and a patient A theme undergoes a change and a patient is affected by the action of the agent (Pinker, 1989) Some causative verbs like *break* in English can alternate between two argument structures—the transitive one and the intransitive one—as shown in (1) and (2)

(1) John broke a stick

(2) A stick broke

Some causative verbs like *cut* in English can occur in only one argument structure—the transitive one—as shown in (3) and (4)

(3) John cut a piece of cloth

(4) *A piece of cloth cut

In other words, causative verbs like *break* participate in the causative alternation, and causative verbs like *cut* do not I will refer to them as *alternating verbs* and *non-alternating verbs*, respectively

Evidence (Bowerman, 1974) shows that in the course of language development, children use non-alternating verbs as alternating verbs for a period of time and then stop (5) shows an overgeneralization a child acquiring Thai makes

(5) *Mae khaat kradaat
Mother be torn paper
'*Mother was torn paper'
(Note that *khaat* is a fixed intransitive verb It is used as a transitive verb)

The question facing language acquisition researchers is why children overgeneralize the causative alternation and how children unlearn them

3 The Causatives in Thai

Thai uses periphrastic causatives and lexical causatives to express causation In the periphrastic construction, the causation is expressed by a complex sentence The verb in the main clause expresses the cause The verb in the embedded clause expresses the result The verb in the main clause is either an empty causative verb *tham* 'make' or *thamhai* 'cause' (6) shows the use of the periphrastic causative in Thai

(6) Dek tham kaew taek
child make glass break
'A child caused a glass to break'

As for lexical causatives, there are two types—*alternating lexical causatives* and *fixed lexical causatives* The alternating lexical causatives are causative verbs like *break* in English, and fixed lexical causatives are causative verbs like *cut* in English (7) and (8) show the use of an alternating lexical causative and a fixed lexical causative

(7) a Ling hak kingmai
Monkey break tree branch
'A monkey broke a tree branch'

b Kingmai hak
tree branch break
'A tree branch broke'

(8) a. Mae taat phaa
mother cut cloth
'Mother cut a piece of cloth'

b Phaa khaat
cloth be cut
'A piece of cloth was cut'

4 Acquisition Theories

Many researchers have tried to explain why children overgeneralize and how they unlearn the overgeneralization Bowerman (1974) proposes that there is a zero-derivation rule by which a homophonous transitive verb is derived from an intransitive verb Children overgeneralize the rule to non-alternating verbs Pinker (1989) proposes that there are constraints delineating verbs into alternating and non-alternating verb classes Children overgeneralize because they have not acquired the constraints According to Pinker, the constraints lie in the semantic structure of verbs Braine et al (1990) propose that when children first acquire verbs, only the actions are encoded, but not the argument structures The argument structures are initially assigned by default from the canonical sentence schemata The default argument structures are replaced when the actual argument structures are acquired Pye (1991, 1994) proposes that errors are due to language specific structures rather than the semantic structure of individual verbs Pye and Loeb (1996) point out that an explanation for the acquisition of the causative alternations must be applicable to the full range of cross-linguistic expressions of causation

5 Data Collection and Results

I collected data from children acquiring Thai to find out if they overgeneralize the causative alternation, and if they do, why they do that and how they unlearn the overgeneralization

The data collection was carried out in two phases In the first phase, the data were collected from my son, Momo, from 3,8 to 6,8 In the second phase, the data were collected from 74 other children ranging in age from 2,6 to 10,0 From Momo, I collected both spontaneous and elicited data. From other children, I collected only elicited data. I met with each child individually for 15 minutes

In eliciting data from the children, I used five verbs in Thai *taek*, *khaat*, *taat*, *hak* and *phaang* The argument structures, selectional restrictions, and close English equivalents of the five verbs are presented below

Fixed intransitive 'taek'

argument structure taek [x taek]
English equivalent inchoative 'break'
selectional restrictions x = a round or fragile object (e g , glass, eggs, walnuts)

Fixed intransitive 'khaat'

argument structure khaat [x khaat]
English equivalent 'be torn'
selectional restrictions x = thin, lightweight object paper, cloth etc

Fixed transitive 'taat'

argument structure [x taat y]
English equivalent 'cut'
selectional restrictions x= instruments (e g scissors, knife)
y= thin light object

Causative alternate 'hak'

argument structure transitive [x CAUSE [y BECOME hak]]
inchoative [x hak]
English equivalent 'break'
selectional restrictions x = thin, (long,) hard objects (e g stick)

Causative alternate 'phaang'

argument structure transitive [x CAUSE [y BECOME phaang]]
inchoative [x phaang]
English equivalent 'collapse'
selectional restrictions mountains, vehicles, and constructions (e g , houses, buildings, dams)

The experimental protocol involved using an agent question 'X tham arai?' ('What is X doing?') and a patient question 'Kert arai kan kap Y?' ('What happened to Y?') to elicit a response through a play session (Braine et al , 1990) I used puppets and toys to create situations in which the different verbs can be used

Momo's spontaneous speech is characterized by syntactic overgeneralizations from transitive verbs to intransitive verbs (decausativization) as shown in (9), and from intransitive verbs to transitive verbs (causativization) as shown in (10), and by self-correction—the use of an overgeneralized form immediately followed by the use of the correct form as shown in (11) (* indicates syntactic overgeneralization)

(9) 6, 8 *Mae kaat
mother bite
'Mother was bitten'
(Note that *kaat* is a fixed transitive verb It is used here as an intransitive meaning 'be bitten')

(10) 3, 9 *Mo yap man
Mo crumple it
'Mo crumpled it'
(Note that *yap* is a fixed intransitive verb It is used as a transitive verb)

(11) 6, 0 *Mae tokjai Mo
mother be frightened Mo
'*You were frightened me'
(Note that tokjai is a fixed intransitive verb Momo immediately corrects himself using the periphrastic causative shown in (12))

(12) 6, 0 Mae thamhai Mo tokjai
mother cause Mo be frightened
'You caused me to be frightened'

Momo's elicited data are characterized by a combination of syntactic and semantic overgeneralization as shown in (13), a syntactic overgeneralization as shown in (14), and a semantic overgeneralization as shown in (16) A semantic overgeneralization involves a violation of selectional restrictions (** indicates a semantic overgeneralization *** indicates a combination of syntactic and semantic overgeneralization)

(13) 3, 9 ***Mae taek kradaat
mother break paper
'Mother broke paper'
(Note that *taek* is a fixed intransitive verb semantically subcategorized for a round or fragile object Here, it is used as a transitive verb with *kradaat* 'paper' which is thin and lightweight)

(14) 5, 7 *Khaat
be torn
'(I) was torn (it)'
(Note that *khaat* is a fixed intransitive verb Here, Momo used it to answer an agent question and then he immediately corrected himself using the periphrastic causative shown in (15))

(15) 5, 7 Mo thamhai band-aid khaat
Mo cause band-aid be torn
'Mo caused the band-aid to be torn'

(16) 5, 7 *Walnut hak.
walnut break
'A walnut broke.'
(Note that I consider *taek* the right verb here because of the roundness of the walnut. Momo seems to pay attention more to the wood-like quality of the outer part of the walnut and uses *hak* instead of *taek*.)

Other children also overgeneralize syntactically and semantically. However, the rate of syntactic overgeneralization is low. The semantic overgeneralization is more pervasive. For example, children use *taek*, *khaat*, and *phaang*, which have different selectional restrictions from *hak*, to answer the patient question for *hak*.

In sum, children acquiring the causative alternation in Thai overgeneralize syntactically and semantically. The determination of a syntactic overgeneralization is straightforward since the argument structure of a verb is fixed. On the other hand, selectional restrictions for a verb are not necessarily fixed. There are variations from the prototypes. Children and adults do not always agree on the range of use for a verb. Moreover, the meaning of a verb can also be extended literally and metaphorically. Thus, it is harder to determine a semantic overgeneralization. In the section below, a theory is proposed to account for the acquisition of argument structure as well as 'flexible' selectional restrictions.

6 A Modular Approach to First Language Acquisition

A language acquisition theory based on the relationship between UG, Linguistic Input, Non-linguistic Input, and Cognition, is proposed. UG refers to innate ability to acquire language. Linguistic Input refers to a particular language a child is exposed to. Non-linguistic Input refers to the input other than Linguistic Input. Cognition refers to the way we perceive Non-linguistic Input. The basic assumptions of the theory are (1) we perceive the world in two ways—one cognitively and one linguistically, (2) two realities are created, resulting in cognitive categories and the lexicon of a language acquired, (3) the language, the cognition, and the world interact throughout one's lifetime, and (4) the discrepancies between adult language and child language are due to incomplete linguistic development as well as the interactions between cognitive development and linguistic development.

The interaction between UG and Linguistic Input can account for the acquisition of the argument structure and the acquisition of the form of the periphrastic causative. The acquisition of selectional restrictions, however, cannot be accounted for without reference to Cognition and Non-linguistic Input. The theory incorporates Braine et al.'s (1990) proposal regarding the default assignment of argument structure, and Pye and Loeb's (1996) proposal regarding the construction of semantic space.

The course of the acquisition of fixed intransitive verb *khaat* in Thai is reconstructed below from the data from children acquiring the causative alternation in Thai, to illustrate how the four modules of the theory interact. *Khaat* is semantically subcategorized prototypically for thin and lightweight objects like paper and cloth.

6.1 The Acquisition of *khaat*, a Fixed Intransitive Verb

The course of the acquisition of *khaat* is presented below. The course includes the syntactic and semantic overgeneralization of *taek* (Steps 1 and 2), the acquisition of the intransitive verb frame for *khaat* (Step 3), the syntactic overgeneralization of *khaat* to the transitive verb frame

(Step 4), the acquisition of the periphrastic causative of *khaat* (Step 5), the use of the syntactically overgeneralized form from Step 4 and the periphrastic form from Step 5, the acquisition of *chuk* 'tear', a fixed transitive, that paired with *khaat*, and the use of *chuk* and the use of the periphrastic causative In Step 1, the child witnesses a Non-linguistic Input—an action The child may register a new cognitive category for the action However, he labels it with a word that he already has in his lexicon—*taek*—creating too large a semantic space for *taek* The argument structure is not yet registered In Step 2, *taek* is still used to signify *khaat*, but an argument structure—a transitive one—is now assigned by default In Step 3, the word *khaat* is acquired along with the intransitive frame from positive evidence or Linguistic Input In Step 4, an argument structure—a transitive one—is again assigned by default In Step 5, the periphrastic causative is acquired from positive evidence In Step 6, an overgeneralized form is followed by the correct periphrastic form In Step 7, the fixed transitive *chuk* 'tear' which pairs with *khaat* is acquired from positive evidence The acquisition of the argument structure for *khaat*, the acquisition of its periphrastic causative, and the acquisition of its paired fixed transitive *chuk*, are completed in Step 7

Step 1 ***Taek
input 1 Non-linguistic Input (an action)
2 an existing verb *taek*

Step 2 ***Taek kradaat
input. a preemptable default argument structure assigned by UG

Step 3 Kradaat khaat
input Linguistic Input (positive evidence)

Step 4 *Khaat kradaat
input a preemptable default argument structure assigned by UG

Step 5 Tham kradaat khaat
input Linguistic Input (positive evidence)

Step 6 *Khaat kradaat / tham kradaat khaat
input from Steps 4 and 5

Step 7 Chuk kradaat
input Linguistic Input (positive evidence)

The acquisition of *khaat* reconstructed above shows the acquisition of the argument structure for *khaat*, a fixed intransitive, and its corresponding fixed transitive *chuk* 'tear', the acquisition of the periphrastic causative, and the acquisition of the selectional restriction for *chuk* and *khaat* with respect to *kradaat* 'paper'

The acquisition of the forms is completed, but the child needs to go on acquiring more selectional restrictions for the two verbs After the prototypical selectional restrictions are acquired, it may appear that the acquisition of the selectional restrictions of a verb is completed However, it is never completed New objects are invented all the time, and the meaning of the verb itself can also be extended literally and metaphorically, or it can even change

7 Conclusion

Data from the acquisition of the causative alternation in Thai is characterized by syntactic as well as semantic overgeneralization A theory based on the relationship between UG, Linguistic Input, Non-linguistic Input, and Cognition, is proposed to account for the syntactic overgeneralizations and their unlearning and the acquisition of selectional restrictions for verbs The acquisition of the selectional restrictions for a verb is never completed, and its on-going acquisition is best captured by the on-going interaction between language and cognition and the non-linguistic input

NOTES

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